If you are interested in adding a terminology to the index please contact the Vocabulary Knowledge Center team at <u>VocabKC</u> and we will assist you in adding the terminology information and links.

## **Terminologies**

| Terminology  | NCI<br>EVS<br>hosted | caBIG®<br>Approved | Description of Terminology   | FAQ<br>Link | Download    |
|--|----------------------|--------------------|--|-------------|-------------|
| Gene Ontology (GO)   | Yes                  | Yes                | Provides a controlled vocabulary to describe gene and gene product attributes in any organism.   | FAQ         | <u>OBO</u>  |
| Logical Observation<br>Identifier Names and<br>Codes (LOINC®)    | Yes                  | Yes                | Facilitates the exchange and pooling of clinical results for clinical care, outcomes management, and research by providing a set of universal codes and names to identify laboratory and other clinical observations.  | FAQ         | RRF         |
| NCI Thesaurus (NCIt )  | Yes                  | Yes                | An ontology-like vocabulary that includes broad coverage of the cancer domain, including cancer related diseases, findings and abnormalities; anatomy; agents, drugs and chemicals; genes and gene products and so on. In certain areas, like cancer diseases and combination chemotherapies, it provides the most granular and consistent terminology available | FAQ         | OWL         |
| RadLex (RID )  | Yes                  | Yes                | A Lexicon for Uniform Indexing and<br>Retrieval of Radiology Information<br>Resources  | FAQ         | PROTEGE     |
| Systematized Nomenclature of Medicine-Clinical Terms (SNOMED CT) | Yes                  | Yes                | One of a suite of designated data standards for use in the electronic exchange of clinical health information. It is considered to be the most comprehensive, multilingual clinical healthcare terminology in the world.   | FAQ         | RRF         |
| African Traditional<br>Medicine (ATMO)                           |                      | Unknown            | Describes the actors' function (healer, fetishist or soothsayer); the different types of proposed process treatment, the symptom's roles and the disease consideration.  | FAQ         | OBOF        |
| Amphibian Gross Anatomy (AmphibAnat)                             |                      | Unknown            | A structured controlled vocabulary of the anatomy of Amphibians.   | FAQ         | <u>OBOF</u> |
|  |                      | Unknown            |  | FAQ         | <u>OBOF</u> |

| Biological Imaging<br>Methods (FBbi )        |     |         | Covers sample preparation, visualization and imaging methods.  |     |             |
|--|-----|---------|--|-----|-------------|
| Biomedical Grid<br>Terminology<br>(BiomedGT) | Yes | Unknown | An open, collaboratively developed terminology for translational research.   | FAQ | OWL         |
| BioPortal Metadata<br>(BPMetadata )          |     | Unknown | Represents the structure that BioPortal will use to represent all of its metadata (ontology details, mappings, notes, reviews, views)  | FAQ | OWL         |
| BioTop (biotop )                             |     | Unknown | A top-domain ontology that provides definitions for the foundational entities of biomedicine as a basic vocabulary to unambiguously describe facts in this domain.   | FAQ | OWL         |
| BIRNLex (birnlex )                           |     | Unknown | Provides entities for data and database annotation for the BIRN project, covering anatomy, disease, data collection, project management and experimental design.   | FAQ | OWL         |
| Bleeding History<br>Phenotype (BHO )         |     | Unknown | An application ontology devoted to the standardized recording of phenotypic data related to hemorrhagic disorders.   | FAQ | PROTEGE     |
| BRENDA tissue /<br>enzyme source<br>(BTO)    |     | Unknown | A structured controlled vocabulary for the source of an enzyme. It comprises terms for tissues, cell lines, cell types and cell cultures from uni- and multicellular organisms.  | FAQ | OBOF        |
| C. elegans<br>development (WBls)             |     | Unknown | A structured controlled vocabulary of the development of Caenorhabditis elegans.   | FAQ | <u>OBOF</u> |
| C. elegans gross<br>anatomy (WBbt)           |     | Unknown | A structured controlled vocabulary of the anatomy of Caenorhabditis elegans.   | FAQ | <u>OBOF</u> |
| C. elegans phenotype<br>(WBPhenotype)        |     | Unknown | A structured controlled vocabulary of Caenorhabditis elegans phenotypes  | FAQ | <u>OBOF</u> |
| Cardiac<br>Electrophysiology<br>(EP)         |     | Unknown | Contains terms describing single-channel electrophysiological experiments and data obtained using voltage-clamp, current clamp and fluorescence imaging techniques applied at the cell level and multi-channel fluorescence imaging techniques applied at the cell, tissue and whole heart levels. | FAQ | OWL         |
| Cell Behavior (CBO)                          |     | Unknown | Designed as a structured controlled vocabulary for what cells do. This ontology is a draft and independent of cell type.   | FAQ | PROTEGE     |
| Cell Cycle (A.<br>thaliana) (CCO)            |     | Unknown | An ontology that integrates and manages knowledge about the cell cycle   | FAQ | <u>OBOF</u> |

|  |     |         | components and regulatory aspects of A. thaliana.   |     |             |
|--|-----|---------|---|-----|-------------|
| Cell Cycle (H. sapiens) (CCO)                          |     | Unknown | An ontology that integrates and manages knowledge about the cell cycle components and regulatory aspects of H. sapiens.   | FAQ | OBOF        |
| Cell Cycle (S. cerevisiae) (CCO)                       |     | Unknown | An ontology that integrates and manages knowledge about the cell cycle components and regulatory aspects of S. cerevisiae.  | FAQ | <u>OBOF</u> |
| Cell Cycle (S. pombe) (CCO)                            |     | Unknown | An ontology that integrates and manages knowledge about the cell cycle components and regulatory aspects of S. pombe.   | FAQ | <u>OBOF</u> |
| Cell type (CL)   |     | Unknown | Designed as a structured controlled vocabulary for cell types. This ontology is not organism specific; indeed it includes cell types from prokaryotes to mammals, including plants and fungi.   | FAQ | <u>OBOF</u> |
| Cereal Plant Development (GRO)                         |     | Unknown | A structured controlled vocabulary for expressing cereal plant development and growth stages.   | FAQ | <u>OBOF</u> |
| Cereal Plant Trait<br>(TO)                             |     | Unknown | A controlled vocabulary to describe each trait as a distinguishable feature, characteristic, quality or phenotypic feature of a developing or mature individual.  | FAQ | OBOF        |
| Chemical Entities of<br>Biological Interest<br>(CHEBI) |     | Unknown | A structured classification of chemical compounds of biological relevance.  | FAQ | <u>OBOF</u> |
| Common Anatomy<br>Reference (CARO)                     |     | Unknown | Facilitates interoperability between existing anatomy ontologies for different species, and will provide a template for building new anatomy ontologies   | FAQ | <u>OBOF</u> |
| Common Terminology Criteria for Adverse Events (CTCAE) | Yes | Unknown | A list of adverse event (AE) terms commonly encountered in oncology. Each AE term is defined and accompanied by a grading scale that indicates the severity of the AE. In the new CTCAE v4.0, the AE terms are organized by the System Organ Classes (SOCs) defined by the Medical Dictionary for Regulatory Activities (MedDRA). CTCAE has been developed from the earlier vocabulary known as CTC (Common Toxicity Criteria). | FAQ | <u>OWL</u>  |
| Comparative Data                                       |     | Unknown | An ontology intended to provide a   | FAQ | OWL         |

| Analysis (CDAO)                               |         | common ontological framework for evolutionary analysis regardless of the type of data involved.  |     |             |
|---|---------|--|-----|-------------|
| Dendritic Cell<br>(DC_CL)                     | Unknown | Representation of types of dendritic cell.<br>Note that the domain of this ontology is<br>wholly subsumed by the domain of the<br>Cell ontology (CL).  | FAQ | <u>OBOF</u> |
| DermLex (DermLex)                             | Unknown | Version 0.1 of the American Academy of Dermatology's lexicon, DermLex  | FAQ | <u>OWL</u>  |
| Dictyostelium Discoideum Anatomy (DDANAT)     | Unknown | A structured controlled vocabulary of the anatomy of the slime-mould Dictyostelium discoideum.   | FAQ | <u>OBOF</u> |
| Drosophila<br>Development (FBdv)              | Unknown | A structured controlled vocabulary of the development of Drosophila melanogaster.  | FAQ | <u>OBOF</u> |
| Drosophila Gross<br>Anatomy (FBbt)            | Unknown | A structured controlled vocabulary of the anatomy of Drosophila melanogaster.  | FAQ | <u>OBOF</u> |
| Electrocardiography (ECG)                     | Unknown | A Driving Biological Project of the NCBO. The ECG Ontology will contain terms for describing electrocardiograms, their capture method(s) and their waveforms.  | FAQ | OWL         |
| Environment<br>Ontology (ENVO)                | Unknown | Ontology of environmental features and habitats  | FAQ | <u>OBOF</u> |
| Event (INOH pathway ontology) (IEV)           | Unknown | A structured controlled vocabulary of pathway centric biological processes. This ontology is a INOH pathway annotation ontology, one of a set of ontologies intended to be used in pathway data annotation to ease data integration. This ontology is used to annotate biological processes, pathways, sub-pathways in the INOH pathway data.  INOH is part of the BioPAX working group. | FAQ | OBOF        |
| Evidence Codes<br>(ECO)                       | Unknown | A rich ontology for experimental and other evidence statements.  | FAQ | <u>OBOF</u> |
| Expressed Sequence Annotation for Humans (EV) | Unknown | Provides structured controlled vocabularies for the annotation of expressed sequences with respect to anatomical system, cell type, developmental stage, experimental technique, microarray platform, pathology, pooling, tissue preparation and treatment.  | FAQ | OBOF        |
| Experimental Factor<br>Ontology (EFO)         | Unknown | An application focused ontology modelling the experimental factors in  | FAQ | <u>OBOF</u> |

|   |     |         | ArrayExpress. The ontology has been developed to increase the richness of the annotations that are currently made in the ArrayExpress repository, to promote consistent annotation, to facilitate automatic annotation and to integrate external data. The methodology employed in the development of EFO involves construction of mappings to multiple existing domain specific ontologies, such as the Disease Ontology and Cell Type Ontology. This is achieved using a combination of automated and manual curation steps and the use of a phonetic matching algorithm. The ontology is evaluated with use cases from the ArrayExpress repository. |     |             |
|---|-----|---------|--|-----|-------------|
| Family Health History Ontology (FHHO)   |     | Unknown | Facilitates representing the family health histories of persons related by biological and/or social family relationships (e.g. step, adoptive) who share genetic, behavioral, and/or environmental risk factors for disease. SWRL rules are included to compute 3 generations of biological relationships based on parentage and family history findings based on personal health findings.  | FAQ | OBOF        |
| Fly Taxonomy<br>(FBsp)                  |     | Unknown | The taxonomy of the family Drosophilidae (largely after Baechli) and of other taxa referred to in FlyBase.   | FAQ | OBOF        |
| FlyBase Controlled<br>Vocabulary (FBcv) |     | Unknown | A structured controlled vocabulary used for various aspects of annotation by FlyBase.  This ontology is maintained by FlyBase for various aspects of annotation not covered, or not yet covered, by other OBO ontologies. If and when community ontologies are available for the domains here covered FlyBase will use them.   | FAQ | OBOF        |
| Fungal Gross<br>Anatomy (FAO)           |     | Unknown | A structured controlled vocabulary for the anatomy of fungi.   | FAQ | <u>OBOF</u> |
| Gene Regulation Ontology (BOOTStrep)    |     | Unknown | A conceptual model for the domain of gene regulation.  | FAQ | <u>OBOF</u> |
| Health Level 7 (HL7)                    | Yes | Unknown | Terminology to populated messages for clinical and administrative data within in the health care arena.  | FAQ | XML         |

| Human Disease<br>(DOID)  |     | Unknown | A comprehensive hierarchical controlled vocabulary for human disease representation  | FAQ | <u>OBOF</u> |
|--|-----|---------|--|-----|-------------|
| Human Genome Organisation Ontology (HUGO)  | Yes | Unknown | Approved gene names and symbols from the Human Genome Organisation (HUGO) Gene Nomenclature Committee at the Europeann Bioinformatics Institute. Each symbol is unique and each gene is only given one approved gene symbol(short-form abbreviation) for each known human gene. This facilitates electronic data exchange and retrieval.                                   | FAQ | Text        |
| Human Phenotype<br>Ontology (HP)   |     | Unknown | Provides a structured and controlled vocabulary for the phenotypic features encountered in human hereditary and other disease. Our goal is to provide resource for the computational analysis of the human phenome, with a current focus on monogenic diseases listed in the Online Mendelian Inheritance in Man (OMIM) database, for which annotations are also provided. | FAQ | <u>OBOF</u> |
| International Classification of Diseases Ninth Revision Clinical Modification (ICD-9-CM) | Yes | Unknown | Used to code and classify morbidity data from inpatient and outpatient records, physician offices, and most National Center for Health Statistics (NCHS) surveys. ICD-9-CM is the official system of assigning codes to diagnoses and procedures associated with hospital utilization in the United States.  | FAQ | Text        |
| Maize Gross<br>Anatomy (ZEA)   |     | Unknown | A structured controlled vocabulary for the anatomy of Zea mays.  | FAQ | <u>OBOF</u> |
| Mammalian<br>Phenotype (MP)  |     | Unknown | A community effort to provide standard terms for annotating mammalian phenotypic data.   | FAQ | <u>OBOF</u> |
| Mass Spectrometry (MS)   |     | Unknown | A structured controlled vocabulary for the annotation of experiments concerned with proteomics mass spectrometry. Developed by the HUPO Proteomics Standards Initiative.   | FAQ | OBOF        |
| Medaka Fish<br>Anatomy and<br>Development (MFO)  |     | Unknown | A structured controlled vocabulary of the anatomy and development of the Japanese medaka fish, Oryzias latipes.  | FAQ | <u>OBOF</u> |
| Medical Dictionary for Regulatory Activities Terminology                                 | Yes | Yes     | A pragmatic, medically valid terminology with an emphasis on ease of use for data entry, retrieval, analysis, and display, as well as a suitable balance between   | FAQ | RRF         |

| (MedDRA)   |     |         | sensitivity and specificity within the regulatory environment. MedDRA terminology applies to all phases of drug development, excluding animal toxicology. It also applies to the health effects and malfunction of devices. |            |             |
|--|-----|---------|---|------------|-------------|
| Microarray and Gene<br>Expression Data<br>Society (MGED) | Yes | Unknown | An ontology for describing samples used in microarray experiments.  | FAQ        | OWL         |
| Microarray Experimental Conditions (MO)                  |     | Unknown | Concepts, definitions, terms, and resources for standardized description of a microarray experiment in support of MAGE v.1.   | FAQ        | <u>OWL</u>  |
| Mosquito Gross<br>Anatomy (TGMA)                         |     | Unknown | A structured controlled vocabulary of the anatomy of mosquitoes.  | <u>FAQ</u> | <u>OBOF</u> |
| Mosquito Insecticide<br>Resistance (MIRO)                |     | Unknown | Application ontology for entities related to insecticide resistance in mosquitos  | FAQ        | <u>OBOF</u> |
| Mouse Adult Gross<br>Anatomy (MA)                        |     | Unknown | A structured controlled vocabulary of the adult anatomy of the mouse (Mus).   | FAQ        | <u>OBOF</u> |
| Mouse Gross Anatomy and Development (EMAP)               |     | Unknown | A structured controlled vocabulary of stage-specific anatomical structures of the mouse (Mus).  | FAQ        | <u>OBOF</u> |
| Mouse Pathology<br>(MPATH)                               |     | Unknown | A structured controlled vocabulary of mutant and transgenic mouse pathology phenotypes  | FAQ        | OBOF        |
| Multiple Alignment (MAO)                                 |     | Unknown | A joint effort to define community standards for data retrieval and exchange in the fields of DNA/RNA alignment, protein sequence and protein structure alignment.  | FAQ        | OBOF        |
| NanoParticle<br>Ontology (NPO)                           | Yes | Unknown | An ontology that represents the basic knowledge of physical, chemical and functional characteristics of nanotechnology as used in cancer diagnosis and therapy.   | FAQ        | OBOF        |
| National Drug File - Reference Terminology (NDF-RT)      | Yes | Unknown | Developed for the Veterans<br>Administration as a reference standard for<br>medications to support a variety of<br>clinical, administrative and analytical<br>purposes.   | FAQ        | OWL         |
| NCI Metathesaurus<br>(NCIm)                              | Yes | Unknown | Modeled after the same RRF structure used for the UMLS Metathesaurus. While the table structures are the same, there are differences in the data that is contained in the NCI Metathesaurus vs the UMLS                     | FAQ        | RRF         |

|  |     |         | Metathesaurus.   |     |             |
|--|-----|---------|--|-----|-------------|
| NIFSTD (NIFSTD)                                    |     | Unknown | Composed of a collection of OWL modules with separate modules covering major domains of neuroscience: anatomy, cell, subcellular, molecule, organism, function and dysfunction.  | FAQ | OWL         |
| OBO Relationship Types (OBO_REL)                   |     | Unknown | Defines core relations used in all OBO ontologies.   | FAQ | <u>OBOF</u> |
| Ontology for<br>Biomedical<br>Investigations (OBI) | Yes | Unknown | Models the design of an investigation, the protocols and instrumentation used, the material used, the data generated and the type analysis performed on it.  | FAQ | <u>OWL</u>  |
| Ontology of Clinical<br>Research (OCRe)            |     | Unknown | An ontology designed to support systematic description of, and interoperable queries on, human studies and study elements.   | FAQ | OWL         |
| Ontology of Physics<br>for Biology (OPB)           |     | Unknown | A reference ontology of classical physics as applied to the dynamics of biological systems. It is designed to encompass the multiple structural scales (i.e., multiscale; e.g., molecules to organisms) and multiple physical domains (i.e., multidomain; e.g.,fluid dynamics, chemical kinetics, particle diffusion, etc.) that are encountered in the study and analysis of biological organisms.          | FAQ | OWL         |
| Parasite Life Cycle<br>(PLO)                       |     | Unknown | Models the life cycle stage details of Trypanosoma cruzi and two related kinetoplastids, Trypanosoma brucei and Leishmania major. In addition to life cycle stages, the ontology also models necessary contextual details such as host information, vector information, strain and anatomical location. All the entities in the ontology are linked to each other by explicitly modeled named relationships. | FAQ | OWL         |
| Pathogen<br>Transmission<br>(TRANS)                |     | Unknown | Describes a process that is the means of how a pathogen is transmitted from one host, reservoir, or source to another host. This transmission may occur either directly or indirectly and may involve animate vectors or inanimate vehicles.   | FAQ | ОВО         |
| Pathway Ontology<br>(PW)                           |     | Unknown | A controlled vocabulary for pathways that provides standard terms for the annotation of gene products.   | FAQ | OBOF        |
| Phenotypic Quality<br>(PATO)                       |     | Unknown | Phenotypic qualities (properties). This ontology can be used in conjunction with   | FAQ | <u>OBOF</u> |

|   |     |         | other ontologies such as GO or anatomical ontologies to refer to phenotypes. Examples of qualities are red, ectopic, high temperature, fused, small, edematous and arrested.   |     |                   |
|---|-----|---------|--|-----|-------------------|
| Physician Data Query<br>(PDQ)                       | Yes | Unknown | Part of NCI's comprehensive cancer database, which contains expert summaries on a wide range of cancer topics.   | FAQ | Data Query<br>PDQ |
| Physico-chemical<br>Methods and<br>Properties (FIX) |     | Unknown | Consists of two ontologies: methods and properties (but not objects, which are subject of the chemical ontology). The methods are applied to study the properties.   | FAQ | <u>OBOF</u>       |
| Plant Environmental<br>Conditions (EO)              |     | Unknown | Represents a controlled vocabulary to describe different types of supplemental environments that have been reported in the experimental profiles of gene expression and phenotype (mutant and QTL) studies on cereal plants.   | FAQ | <u>OBOF</u>       |
| Plant Growth and Developmental Stage (PO)           |     | Unknown | A controlled vocabulary of growth and developmental stages in various plants.  | FAQ | <u>OBOF</u>       |
| Plant Structure (PO)                                |     | Unknown | A controlled vocabulary of plant morphological and anatomical structures representing organs, tissues, cell types, and their biological relationships based on spatial and developmental organization.   | FAQ | <u>OBOF</u>       |
| Protein Modification<br>(MOD)                       |     | Unknown | An ontology consisting of terms that describe protein chemical modifications, logically linked by an is_a relationship in such a way as to form a direct acyclic graph (DAG). The PSI-MOD ontology has more than 45 top-level nodes, and provides alternative hierarchical paths for classifying protein modifications either by the molecular structure of the modification, or by the amino acid residue that is modified. | FAQ | OBOF              |
| PRotein Ontology<br>(PRO)                           |     | Unknown | Designed to describe the relationships of proteins and protein evolutionary classes (ontology for ProEvo), to delineate the multiple protein forms of a gene locus (ontology for protein forms), and to interconnect existing ontologies   | FAQ | <u>OBOF</u>       |
| Protein-Protein<br>Interaction (MI)                 |     | Unknown | A structured controlled vocabulary for the annotation of experiments concerned with protein-protein interactions. Developed by   | FAQ | OBOF              |

|   |         | the HUPO Proteomics Standards Initiative.  |     |             |
|---|---------|--|-----|-------------|
| Proteomics Data and<br>Process Provenance<br>(ProPreO)  | Unknown | A comprehensive proteomics data and process provenance ontology.   | FAQ | OWL         |
| Rat Strain Ontology<br>(RS)                             | Unknown | Defines the hierarchical display of the different rat strains as derived from the parental strains   | FAQ | <u>OBOF</u> |
| Sample Processing<br>and Separation<br>Techniques (SEP) | Unknown | A structured controlled vocabulary for the annotation of sample processing and separation techniques in scientific experiments, such as, and including, gel electrophoresis, column chromatography, capillary electrophoresis, centrifugation and so on. Developed jointly by the HUPO Proteomics Standards Initiative and The Metabolomics Standards Initiative.  | FAQ | OBOF        |
| Sequence Ontology<br>(SO)                               | Unknown | A set of terms and relationships used to describe the features and attributes of biological sequence. SO includes different kinds of features which can be located on the sequence. Biological features are those which are defined by their disposition to be involved in a biological process.   | FAQ | OBOF        |
| SNP-Ontology<br>(SNPO)                                  | Unknown | A domain ontology that provides a formal representation (OWL-DL) of genomic variations. Despite its name, SNP-Ontology, is not limited to the representation of SNPs but it encompasses genomic variations in a broader meaning. SNP-Ontology is general enough to enable the representation of variations observed in genome of various species. Latest versions of SNP-Ontology include the representation of haplotype and of CNV. The unambiguous representation of genomic variations provided by SNP-Ontology enables to integrate heterogeneous data related to genomic variations. | FAQ | OWL         |
| Spatial Ontology<br>(BSPO)                              | Unknown | A small ontology for anatomical spatial references, such as dorsal, ventral, axis, and so forth.   | FAQ | <u>OBOF</u> |
| Spider Ontology<br>(SPD)                                | Unknown | An ontology for spider comparative biology including anatomical parts (e.g. leg, claw), behavior (e.g. courtship, combing) and products (i.g. silk, web, borrow).  | FAQ | OBOF        |

| Subcellular Anatomy<br>Ontology (SAO)             | Unknown | Describes structures from the dimensional range encompassing cellular and subcellular structure, supracellular domains, and macromolecules.  | FAQ | OWL         |
|---|---------|--|-----|-------------|
| Suggested Ontology for Pharmacogenomics (SOPHARM) | Unknown | Proposes a formal description of pharmacogenomic knowledge. SO-Pharm articulates different ontologies that represent complementary sub-domains of pharmacogenomics, i.e. related to genotype, phenotype, drugs, and clinical trials. SO-Pharm enables to represent pharmacogenomic relationships between a drug, a genomic variation and a phenotype trait. In addition, it enables to represent patient and more largely panel included in trials, and populations. SO-Pharm enables the representation of measured items on this patients such as results from the observation of a phenotype trait or of genomic variations. SO-Pharm supports knowledge about pharmacogenomic hypothesis, case study, and investigations in pharmacogenomics. SO-Pharm is designed to facilitate data integration and knowledge discovery in pharmacogenomics. In addition it provides a consistent articulation of ontologies of pharmacogenomic sub-domains. | FAQ | OWL         |
| Systems Biology<br>(SBO)                          | Unknown | A terminology for indexing and defining terms used in quantitative biochemistry. The ontology is made up of four orthogonal vocabularies.  | FAQ | <u>OBOF</u> |
| Teleost Anatomy and<br>Development (TAO)          | Unknown | Multispecies fish anatomy ontology. Originally seeded from ZFA, but intended to cover terms relevant to other taxa   | FAQ | <u>OBOF</u> |
| Teleost Taxonomy<br>(TTO)                         | Unknown | Used to facilitate annotation of phenotypes, particularly for taxa that are not covered by NCBI because no submissions of molecular data have been made. Taxonomy ontologies can also be valuable in annotating legacy data, where authors make phenotype or ecological assertions (e.g., host-parasite associations) that refer to groups that are reorganized or no longer recognized. The taxonomy ontology serves as the source of taxa for our project's use for identifying evolutionary changes that match the phenotype of a zebrafish mutant.   | FAQ | OBOF        |

| Tick Gross Anatomy (TADS)                       |     | Unknown | The anatomy of the Tick, Families: Ixodidae, Argassidae.   | FAQ | <u>OBOF</u> |
|---|-----|---------|--|-----|-------------|
| <u>Uber Anatomy</u><br><u>Ontology</u> (UBERON) |     | Unknown | A multi-species anatomy ontology created to facilitate comparison of phenotypes across multiple species. Uberon is generated semi-automatically from the union of existing species-centric anatomy ontologies.   | FAQ | <u>OBOF</u> |
| UMLS Semantic<br>Network (UMLS)                 | Yes | Unknown | One of three UMLS Knowledge Sources developed as part of the Unified Medical Language System (UMLS) project. The network provides a consistent categorization of all concepts represented in the UMLS Metathesaurus.   | FAQ | RRF         |
| Units of<br>Measurement (UO)                    |     | Unknown | Metrical units for use in conjunction with PATO  | FAQ | OBOF        |
| Vaccine Ontology<br>(VO)                        |     | Unknown | Vaccines play a central role in preventing infectious diseases and improving public health. To standardize vaccine annotation, integrate varied vaccine types for comprehensive data analysis, and support automated reasoning, the community-based Vaccine Ontology (VO) has been developed. VO utilizes the Basic Formal Ontology (BFO) as the top ontology and the Relation Ontology (RO) for definition of term relationships. Currently VO covers varied vaccine related aspects with an emphasis on classification of vaccines and vaccine components, vaccine quality and phenotypes, and host immune response to vaccines. | FAQ | OWL         |
| Xenopus Anatomy<br>and Development<br>(XAO)     |     | Unknown | A structured controlled vocabulary of the anatomy and development of the African clawed frog (Xenopus laevis).   | FAQ | <u>OBOF</u> |
| Yeast Phenotypes<br>(YPO)                       |     | Unknown | A structured controlled vocabulary for the phenotypes of budding yeast.  | FAQ | OBOF        |
| Zebrafish (ZFA)                                 | Yes | Unknown | A structured controlled vocabulary of the anatomy and development of the Zebrafish (Danio rerio).  | FAQ | <u>OBO</u>  |